WHAT IS CLAIMED IS:

1. A method for controlling a quiescent point of a linear interferometric sensor system comprising the steps of:

illuminating an interferometric sensor with a light source;

filtering light reflected by the interferometric sensor with an adjustable grating, the adjustable grating having a pass band, the pass band having a center frequency;

converting the filtered light to an electrical signal;

generating a feedback signal based on a steady state component of the electrical signal and a set point; and

using the feedback signal to control the adjustable grating such that a quiescent point of the sensor system is maintained at a desired location corresponding to the set point.

2. The method of Claim 1, wherein the interferometric sensor comprises a Fabry-Perot cavity.

3. The method of Claim 1, wherein the interferometric sensor comprises a Fizeau cavity.

4. The method of Claim 1, wherein the interferometric sensor is a fiber optic sensor.

5. The method of Claim 1, wherein the interferometric sensor is a Michelson interferometer.

6. The method of Claim 1, wherein the interferometric sensor is a Mach-Zehnder interferometer.

7. The method of Claim 1, wherein the interferometer sensor is a Sagnac interferometer.

8. The method of Claim 1, wherein the diffraction grating is mounted on a motorized rotatable stage.

9. The method of Claim 1, further comprising the step of collimating light diffracted by the adjustable grating.

10. The method of Claim 9, further comprising the step of passing the collimated light to a photodetector.

11. The method of Claim 10, wherein the light is passed to the photodetector through a multimode fiber.

12. The method of Claim 9, further comprising the step of passing the collimated light to an optical spectrum analyzer.

13. The method of Claim 1, further comprising the step of filtering the electrical signal with a low pass filter to isolate the steady state component of the electrical signal.

14. The method of Claim 1, wherein the interferometric sensor system is a self-calibrating interferometric/intensity-based (SCIIB) system in which light with a coherence length less than a cavity length of the interferometric sensor is used to illuminate the interferometric sensor, light reflected by the interferometric sensor is split into a reference channel and a signal channel and the filtering step is performed only for light in the signal channel, the light in the reference channel and the filtered light in the signal channel are converted into corresponding electrical signals, and a ratio of the corresponding electrical signals is formed to cancel effects common to both channels.

15. A linear interferometric sensor system comprising:

a light source;

an interferometric sensor;

a coupler connected to the light source and the interferometric sensor;

an adjustable grating connected to the coupler to receive light reflected by the interferometric sensor, the adjustable device having a pass band, the adjustable device being configured to filter out light reflected by the interferometric sensor at frequencies outside of the pass band and pass light reflected by the interferometric sensor within the pass band;

a first photodetector connected to convert light passed by the adjustable grating into a first electrical signal;

a feedback circuit connected to receive the first electrical signal from the first photodetector, the feedback circuit being configured to output a feedback signal to control the adjustable device such that a quiescent point of the sensor system remains at a desired location, the feedback signal being based on a steady state component of the electrical signal and a set point corresponding to the desired location.

16. The system of Claim 15, wherein the interferometric sensor comprises a Fabry-Perot cavity.

17. The system of Claim 15, wherein the interferometric sensor comprises a Fizeau cavity.

18. The system of Claim 15, wherein the interferometric sensor is a fiber optic sensor.

19. The system of Claim 15, wherein the interferometric sensor is a Michelson interferometer.

20. The system of Claim 15, wherein the interferometric sensor is a Mach-Zehnder interferometer.

21. The system of Claim 15, wherein the interferometric sensor is a Sagnac interferometer.

22. The system of Claim 14, wherein the adjustable grating is a grating mounted on a motor driven rotatable stage.

23. The system of Claim 14, further comprising the step of collimating light diffracted by the adjustable grating.

24. The system of Claim 14, wherein the light is passed to the first photodetector through a multimode fiber.

25. The system of Claim 14, wherein the first photodetector forms part of an optical spectrum analyzer.

26. The system of Claim 14, wherein the feedback circuit includes a low pass filter to isolate the steady state component of the electrical signal.

27. The system of Claim 14, further comprising:

a beam splitter connected between the coupler and the adjustable grating, the beam splitter being configured to split the light reflected by the interferometric sensor into a reference channel and a sensor channel, the sensor channel being connected to the first photodetector;

a second photodetector connected to convert light from the reference channel into a second electrical signal; and

a divider connected to receive the first electrical signal and the second electrical signal and output a ratio of the first and second electrical signals.